

## ABSTRACT OF THE DISCLOSURE

Variable potential electrokinetic devices and electrokinetic multipliers used for pumping and flow control are disclosed that offer improvements in safety and design flexibility. The devices of the present invention take advantage of combinations of  
5 pumping conduits and conducting conduits to permit the use of lower operating voltages in pumps, pressure multipliers, and flow controllers. Devices having  $N$  pumping stages and  $2N + 1$  electrodes permit the use of arbitrary voltages at the fluid connection points between the devices and other system components, further improving device safety and flexibility.